

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**ROW ARRANGEMENT**

(acre)

**CODE 557**

**DEFINITION**

Establishing a system of crop rows on planned grades and lengths primarily for erosion control and water management.

**PURPOSES**

This practice may be applied as part of a resource management system to reorient the direction of crop rows to support one or more of the following:

- ☐ Reduce crop row grade.
- ☐ Reduce crop row length.
- ☐ Provide adequate surface water drainage.
- ☐ Reduce erosion.
- ☐ Permit optimum use and management of rainfall and irrigation water.
- ☐ Minimize field slope length.

**CONDITIONS WHERE PRACTICE APPLIES**

This practice applies to crop row arrangement on dry and irrigated cropland where crops are grown in rows and a problem of inadequate drainage, soil erosion, or inadequate use of available rainfall or irrigation water exists.

Proper row arrangement is applicable:

1. As part of a surface drainage system for a field where the rows are planned to carry excess water to surface drains.
2. To facilitate optimum use of irrigation water on sprinkler and graded furrow irrigation systems.

3. In dry cropland areas where it is necessary to control the grade of rows to use available rainfall more fully.
4. On sloping land, with or without other conservation practices, where control of the slope length, crop row length, grade, and direction of rows can help reduce soil erosion.

**CRITERIA**

**General criteria applicable to all purposes**

Row arrangement shall facilitate the use of applicable field equipment in the field.

**Surface drainage**

As part of a surface drainage system, row arrangement shall:

1. Conform to the drainage part of the technical guide for the area regarding grade and length.
2. Facilitate flow of excess water from the field into surface ditches.
3. Minimize field slope length

**Furrow irrigation**

As part of a furrow or sprinkler irrigation system, row arrangement shall:

1. Conform with the Washington Irrigation Guide for:
  - 1.1. Areas regarding grade and length of furrows
  - 1.2. Percent slope and slope length when using sprinkler irrigation
2. Optimize irrigation application uniformity

3. Facilitate the improvements for irrigation water management in the field.
4. Optimize use of precipitation as part of the water requirement.

### **Erosion control and water conservation**

As part of an erosion control and/or water conservation system for a field, row arrangement shall:

1. Conform to the technical guide for the area for the particular conservation practice for which the row arrangement is a facilitating measure.
1. Conform to the grade and length requirements for terraces if the arrangement is used without other conservation engineering practices.
2. Optimize non-growing season and growing season precipitation as part of the water budget.

## **CONSIDERATIONS**

### **Water Quantity**

1. Effects upon components of the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation, and ground water recharge.
2. Variability of effects caused by seasonal or climatic changes.
3. Effects of vegetation on soil moisture.
4. Effects of snow-catch and melt on water budget components.
5. The potential for a change in plant growth and transpiration because of changes in the volume of soil water.
6. Effects on downstream flows or aquifers that would affect other water uses or users.
7. Effects on the volume of downstream flow to prohibit undesirable environmental, social or economic effects.
8. The effect on the water table of the field to ensure that it will provide a suitable rooting depth for anticipated land uses.
9. Potential use for water management to conserve water.

### **Water Quality**

1. Effects of both growing and decaying vegetation or nutrient balance in the root zone.
2. Effects of nutrients and pesticides on surface and ground water quality.
3. Effects on the visual quality of downstream water resources.
4. Effects on the movement of dissolved substances below the root zone and toward ground water.
5. Effects of water levels on solid nutrient processes such as plant nutrient use.
6. Effects of soil and water level control on the salinity of soils, soil water or downstream water.
7. Effects on wetlands and water-related wild life habitats.
8. Effects on the field nutrient budget as related to removal, residence, and accumulation of nutrients.

## **PLANS AND SPECIFICATIONS**

Plans and specifications for row arrangements shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

## **OPERATION AND MAINTENANCE**

An Operation and Maintenance plan must be prepared for use by the landowner or operator responsible for operation and maintenance of row arrangement. The plan should provide specific instructions for operating and maintaining the rows to insure they function properly. Minimum requirements to be addressed in the Operation and Maintenance Plan are:

1. Prompt repair or replacement of damaged components is necessary.
2. Maintain vigorous vegetative growth in areas designated for erosion control.

List items specific to the project on the "Operation and Maintenance Worksheet".

## REFERENCES

USDA NRCS, National Engineering Field  
Handbook for Conservation Practices,  
Chapter 15.

USDA NRCS, Washington Irrigation Guide.

USDA NRCS, National Engineering Handbook  
Part 652 - Irrigation Guide.